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AUTHOR Backer, Patricia Ryaby
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ABSTRACT

This paper discusses a technological enhancement of traditional portfolios, electronic CD-ROM portfolios. The Division of Technology at San Jose State University offers a concentration in document design and management (DDM) to prepare students for the future in global communications. As part of the requirements for graduation in the DDM concentration, students were required to complete an electronic portfolio of academic and work experiences, using this activity as a capstone experience in order to demonstrate proficiency and to create a multimedia work to showcase the work done in their educational career. The electronic portfolio was piloted in 1996 with 14 students. Four students presented electronic resumes in the model of traditional paper-and-pencil resumes with few multimedia features. The second group of four resumes maintained the structure of the traditional resume but expanded each section with multimedia features such as videos and sound. The last group of six resumes broke with tradition and created new structures with complex multimedia features. These resumes demonstrated the way in which electronic resumes, as outgrowths of portfolios, can encourage students to express themselves visually. (Contains 8 figures and 13 references.) (SLD)

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The use of portfolios in professional education: A multimedia model of instructional methodology

Patricia Ryaby Backer
Division of Technology
San Jose State University
1 Washington Square
San Jose, CA, 95192-0061
408-924-3214
pbacker@sjsuvm1.sjsu.edu

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Perspectives

Multimedia and multi-modes have long been known as being effective and efficient in the teaching and learning environment. It is well documented that the more options we offer the learner as teachers, the more efficient the learning outcomes. More specifically, in the traditional drafting and design curriculum, multimedia has been limited to the two-dimensional world of paper and pencil. The growth of computer aided design has broadened this focus; however, the emphasis still remains local.

Figure 1. Goals for the Document Design & Management Area of Concentration

Document Design & Management is designed to provide an overview and technical preparation in the communications industry. Through the completion of this area of concentration, students will:
◊ Learn about the multi-faceted world of communication which includes written, verbal, & graphic media
◊ Acquire skills related to the design, development, management, production, & control of technical documents
◊ Understand the dynamic nature of the international interfaces between CADD, Graphic Arts, Printing and Publishing endeavors
◊ Recognize a variety of contemporary ethical issues associated with technological advancements in electronic image processing and electronic technical publications
◊ Learn to think and respond critically and creatively to solve two- and three-dimensional design problems
◊ Use and apply innovative technologies such as solid modeling, wire framing, and multimedia to solve design problems
◊ Contribute to and advance in positions of responsibility in this industry

There is a critical need to explore new opportunities for students to expand beyond the walls of the classroom and draw and publish in new, diverse, electronic formats including the World Wide Web and CD-ROM. The Division of Technology at San Jose State University

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responded to this need for a more diversified and innovative curriculum by moving to the forefront of technological changes. A BS in industrial technology with a concentration in document design and management (DDM) was developed to prepare students for the years 2000 and beyond. The curriculum was designed to prepare students in the global communications industries of Silicon Valley with knowledge, skills, and practical experiences in design, graphics, and visual media, and more specifically, expertise in the multi-faceted world of communications. The focus of DDM is on electronic communications in its broadest form.

Electronic Portfolios as an Assessment Tool. According to Crouch and Fontaine (1994, p. 306), the term "portfolio is defined as a selection of assignments that a student has consciously assembled from a number of pieces produced over a semester or some other period of time." Lankes (1995) notes six varieties of portfolios as they are used currently in education. She describes these six types as: "developmental" portfolios that document improvement in a particular subject area, "teacher planning" portfolios that allow teachers to determine the abilities of an incoming class, "proficiency" portfolios which can determine graduation eligibility, "showcase" portfolios which can be used as a resume to collect samples of work across an educational career, "employment skills" portfolios that collect information and assignments related to work readiness, and "college admission" portfolios which can be used as adjuncts to standard admission procedures and information.

In the elementary grades, portfolios have been found to be effective in helping the teachers make instructional decisions in the classroom (Dewitz, Carr, Palm, & Spencer, 1992). A review of research in the use of portfolios in mathematics learning showed that they enhanced students' mathematics learning and communication about student progress among teachers, students, and parents (Cicmanec & Viechnicki, 1994). However, in the Vermont statewide performance assessment of portfolios, this positive impact on instruction contrasted with empirical findings about the quality and reliability of performance data the program gave (Koretz, Stecher, Klein, & McCaffrey, 1994). In the university setting, portfolios are being suggested and used as a method for assessment in teacher education because they allow both the potential teacher and the educational professor to address issues in greater depth (Richlin & Manning, 1996). In addition, they have been used in other areas including writing, education, and business communication (see Bacon & Bloom, 1995; Reilly et al., 1993).

This paper discusses a technological enhancement of traditional portfolios, electronic CD-ROM portfolios. There have been few studies that have considered the use of multimedia portfolios as an assessment tool. Gamon and Robinson (1996) discussed the use of electronic portfolios as a measure of the professionality of student teacher candidates at Eastern Washington University. Teacher candidates leave the university with a electronic CD-ROM, which contains a comprehensive outline of their accomplishments, teaching experiences, and evaluations. The authors do not assess the effectiveness of this tool; rather, they focus on its use by administrators and teachers. Black (1995) described the use of electronic portfolios to measure student progress in gaining technology skills and technological literacy in secondary teacher education. The portfolios were composed of all technology-based products developed

during a course on instructional technology and included: post tests measuring technology knowledge, a comprehensive media center assignment, and feedback ratings of their exhibition of technology skills at the professional internship site. Others have discussed the use of electronic portfolios as professional resumes (Riggsby et al, 1995), competency inventories for jobs in the culinary arts (VanLandingham, 1995), and digital student projects (Fasick & McLaren, 1995; Milone, 1995).

Techniques

As part of the requirements for graduation in the DDM area of concentration, students were required to complete an electronic portfolio (resume) of their academic and work experiences. The goal of this activity was two-fold. The first goal was to use this activity as a capstone experience for students; in this way, it served as a "proficiency" portfolio (Lankes, 1995). The second goal was to encourage the students to create a multimedia work that would "showcase" their work done in their educational career.

Figure 2. Electronic Resume Instructions for Students in IndS 189 Class, Spring 1996

> You must design, produce, and press a CD-ROM version of your electronic resume (or other equivalent document if approved by the professors). This resume should include samples of your work as well as "traditional" resume information. It must be authored on the DOS/Windows platform using the application Authorware. Also, it must include a minimum of 1 video file (Quicktime, VFW, or Animation) captured by the student, 2 sound files, and 4 pictures taken by the student (these can be scanned or downloaded using the Quicktake camera). You must provide cover art and installation instructions for your resume in addition to the actual multimedia files.
>
> There are intermediate due dates for this final project. Each of these intermediate steps will be included in the final grade of your multimedia. Your first such step is your interface design, due 2/28. On that day, we will be critiquing each student's interface in class. You must provide the digital version of your interface using Authorware. The second outcome is your storyboards, due 4/3--these storyboards should depict an outline of your project and will assist you in finishing your multimedia. The third intermediate step is your cover art, due 4/17. Each of these three submissions will count for 10% of your final grade on your electronic resume. Each of these assignments are due at 1:00 p.m. and must be turned in at the beginning of class.
>
> Each student in the class will be randomly assigned to one of four groups; the due date of this assignment varies for each group. Your electronic resume is due by 1:00 p.m. on the due date. Your electronic resume must be submitted on a Syquest cartridge. You must include all necessary video and audio files. You may use your own Syquest or load it on one of the Division's cartridges.
>
> Each student will meet individually with the instructors in this class to review their electronic resume following this submittal. A sign-up sheet will be available in class. After the electronic resume is reviewed, each student must press their own CD-ROM.

The students were given instruction and examples of previous electronic resumes completed in the Fall of 1995. During the Fall 1995 semester, this activity was piloted with two students who were completing their requirements for their degrees. The entire course

was first offered during the Spring 1996 semester. All students in the Spring 1996 semester received the same guidelines for their resumes. Figure 2 displays the requirements for the electronic resume which appeared on the course syllabus for the Spring 1996 class.

Results

Fourteen students completed the first offering of Industrial Studies 189: *Document Production and Control Seminar* during the Spring 1996 semester. In evaluating the final electronic resumes, the resultant electronic resumes fell into three distinct groupings: traditional resume—4 students, extended traditional—4 students, and full multimedia—6 students.

Group 1: The "traditional resume." This first group of electronic resumes maintained the paradigm of the traditional, paper-based resume and did not include many details nor multimedia features. Figure 3 shows the main menu page from one of the student's projects in this group. In considering this figure, one can see that the design is simplistic with little interaction or special effects.

Figure 4 shows one of the subsections in the same student's resume (the section entitled "Academic" on the main menu). As indicated in Figure 4, the students in this group maintained a "traditional, paper-based" paradigm despite authoring in a multimedia environment. In general, they included the exact same categories as their paper resumes and limited the information in each section to that found on a traditional resume. Although most of the students in this group fulfilled the minimum requirements for this assignment, there was little attempt to include additional features or multimedia elements into their electronic resumes.

Group 2: The extended "traditional resume." The second group of resumes maintained the structure of the traditional resume but expanded each section including multimedia features such as videos, sounds, and/or graphics. An example of this group of resumes is shown in Figure 5. The interface designs of this set of resumes also were simplistic with few features and details. In this way, they were similar to the resumes in group 1. The differences in this group can be better seen in Figure 6, which shows one of the subsections (Education) in this resume. This student added more multimedia features to his resume than did students in the first group. Both of the two photos that appear on Figure 6 were animated and added more complexity to this multimedia document.

Group 3: The multimedia resume. The last group of resumes broke with the traditional paradigm and recreated new structures. Figure 7 shows the main menu of one of the students in this group. This particular student is typical of this group in the amount of complexity she included in her electronic resume. Prior to her main menu appearing, she had an introductory animation with her name being dragged out. Other students in this group either included videos of themselves or other multimedia features to preface their interface.

When one considers the subsections of this resume (and others in this group), they are more complex than the other two groups. Most of them include subsections (or categories) in each section. This allows the user to have more options and make more choices. Figure 8 illustrates this design factor. (Figure 6 represents the options under **Track 3: Portfolio** in Figure 7). Instead of having a simple screen or buttons to show each subsection, this student used a pictorial approach, a metaphor of an art gallery to show her portfolio. In addition, she included an introductory video in this section to explain how to operate this section. Also, a perpetual video logo of her name ran continuously in the top, right corner of her screen.

Educational Importance

The major theme throughout this paper deals with the infusion of high technology and multimedia instructional modes into the professional educational curriculum. This paper showcases one technique for promoting student learning and achievement. The development of portfolios by students is not a cursory process. In order to be effective, portfolios require students to become self-reflective and view their work as a whole rather than as unrelated pieces. Electronic resumes, as natural technological outgrowths of portfolios, can expand this active process further by encouraging students to express themselves visually as well as in written form. In addition, this study shows that the use of electronic portfolios brings learning that is interactive and socially based. Although unplanned by the instructors, students freely collaborated with each other, both in designing the multimedia as well as critiquing the content. This student-directed, collaborative learning possible is the best outcome of this activity.

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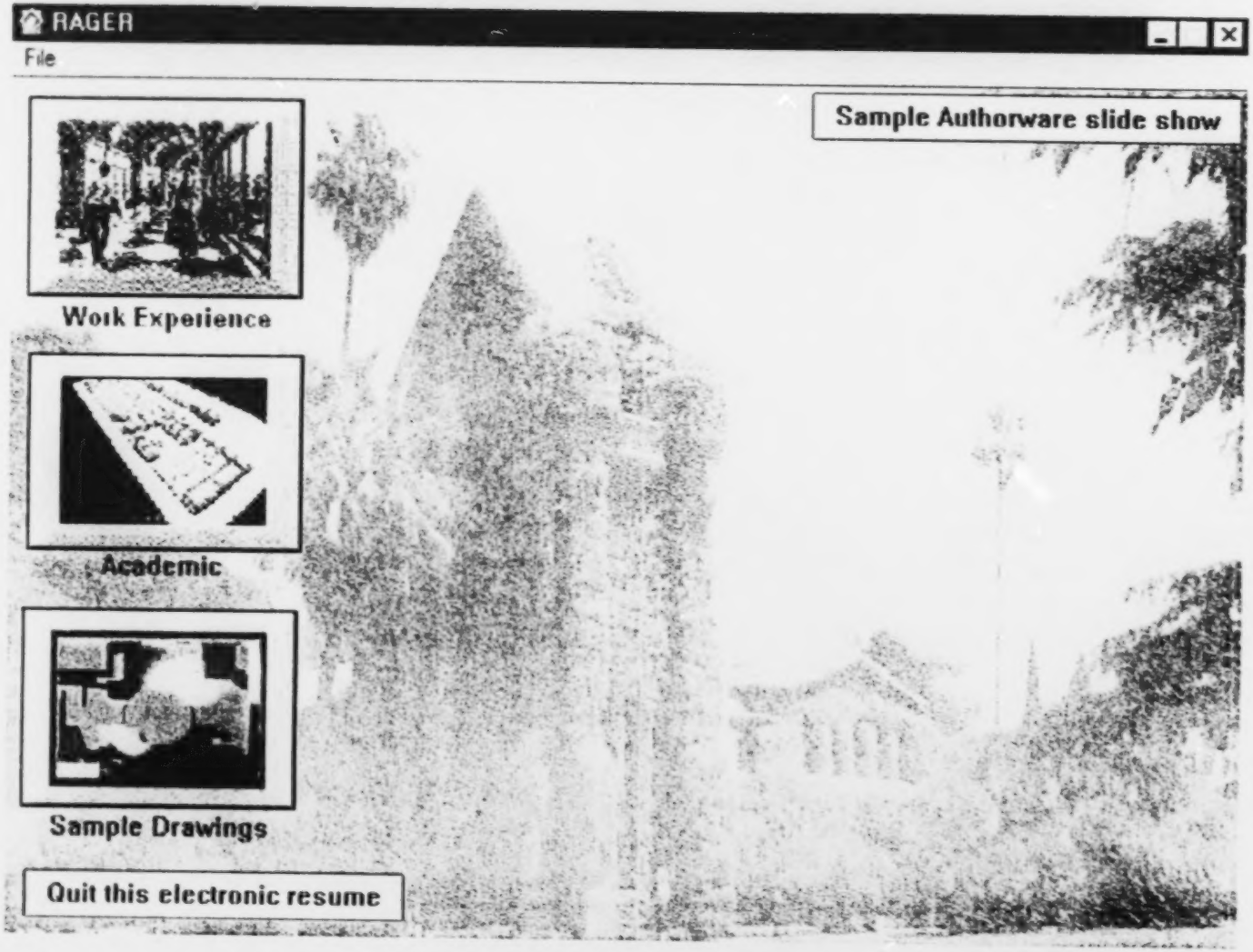

Figure 3. Screen Print, Main Menu, Sample Resume in Group 1

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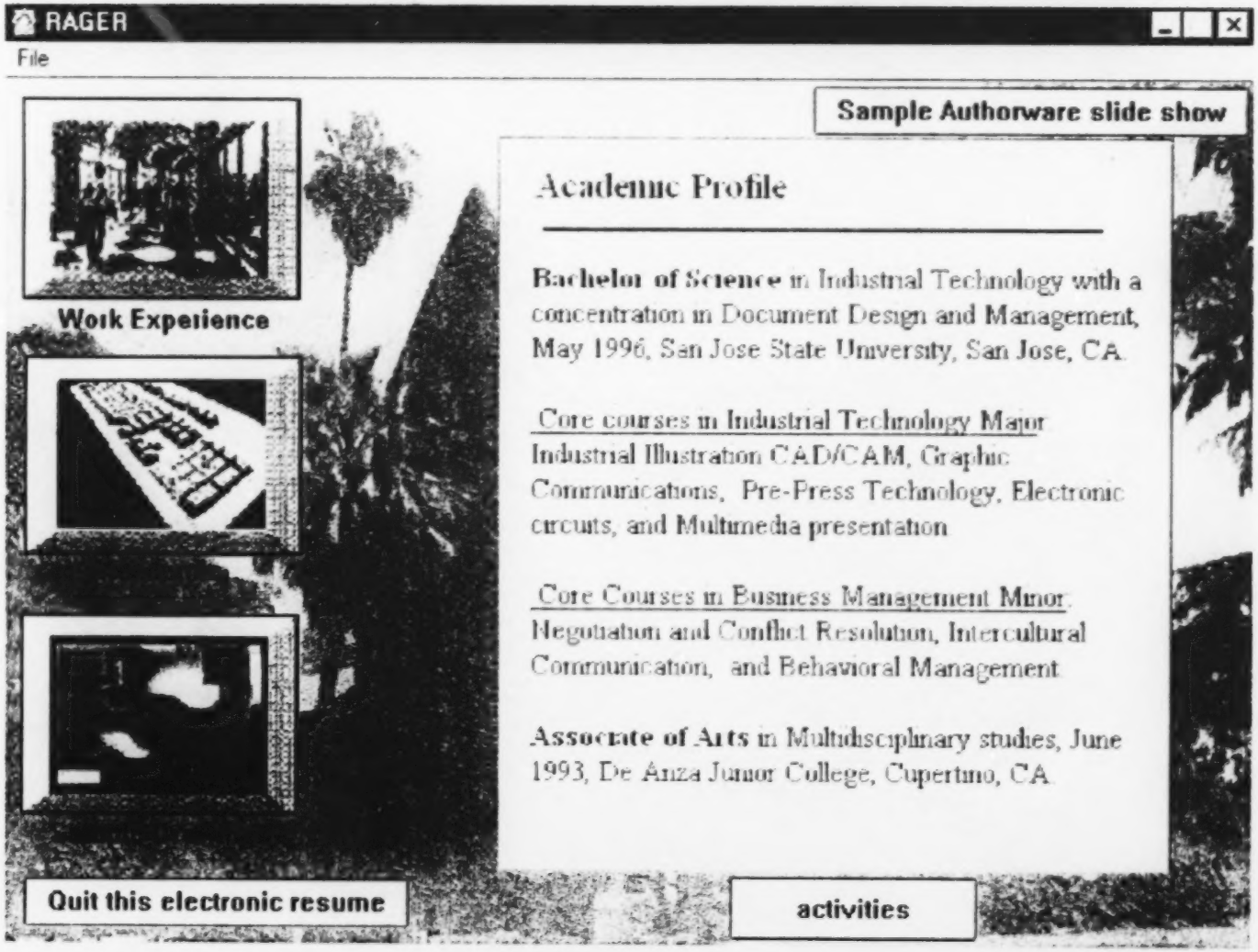
RAGER
File
Sample Authorware slide show
Work Experience
Academic Profile
Bachelor of Science in Industrial Technology with a concentration in Document Design and Management, May 1996, San Jose State University, San Jose, CA.
Core courses in Industrial Technology Major
Industrial Illustration CAD/CAM, Graphic Communications, Pre-Press Technology, Electronic circuits, and Multimedia presentation
Core Courses in Business Management Minor
Negotiation and Conflict Resolution, Intercultural Communication, and Behavioral Management
Associate of Arts in Multidisciplinary studies, June 1993, De Anza Junior College, Cupertino, CA.
Quit this electronic resume
activities

Figure 4. Screen Print, Sample Resume in Group 1, Section "Academic"

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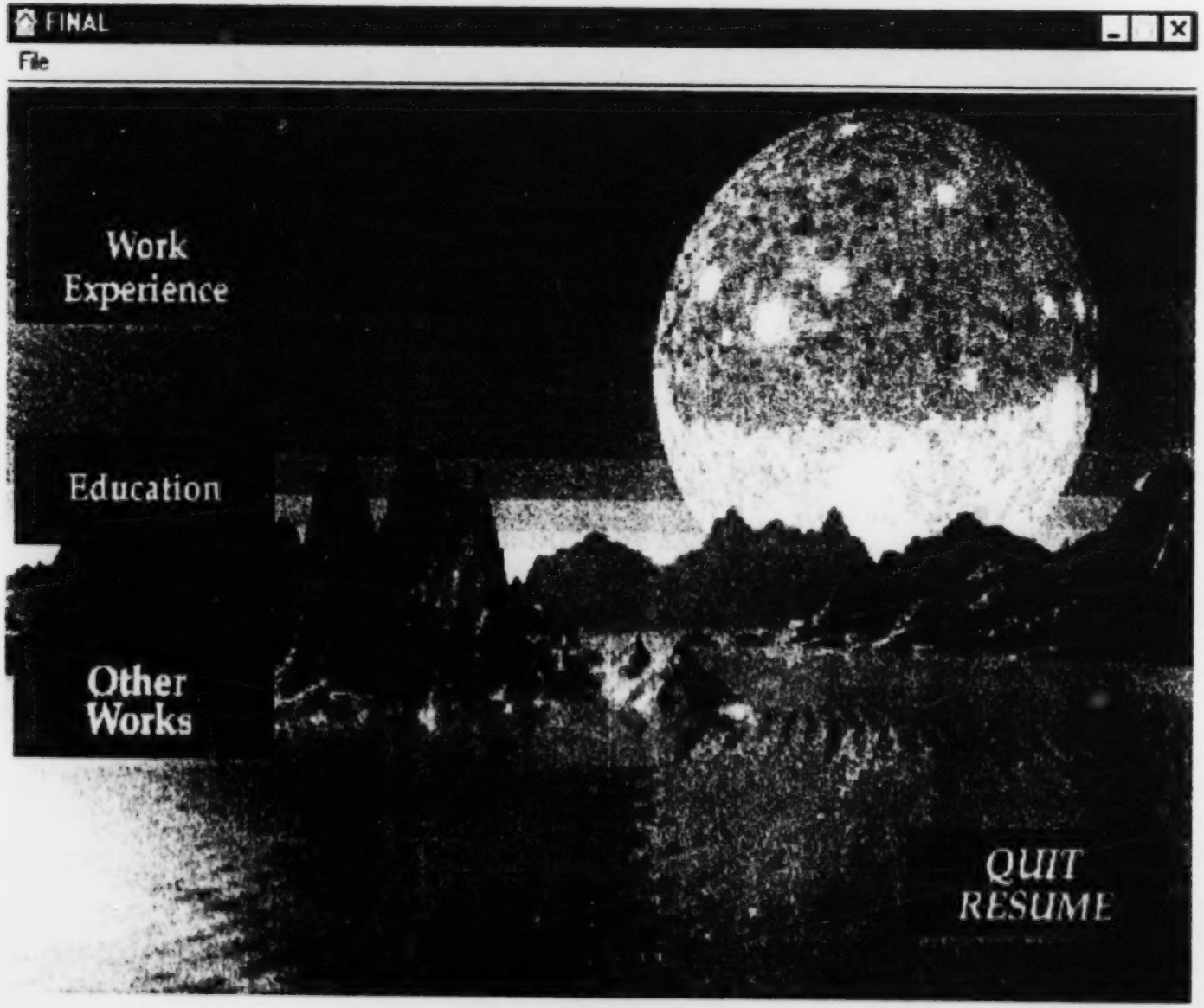

Figure 5. Screen Print, Main Menu, Sample Resume in Group 2

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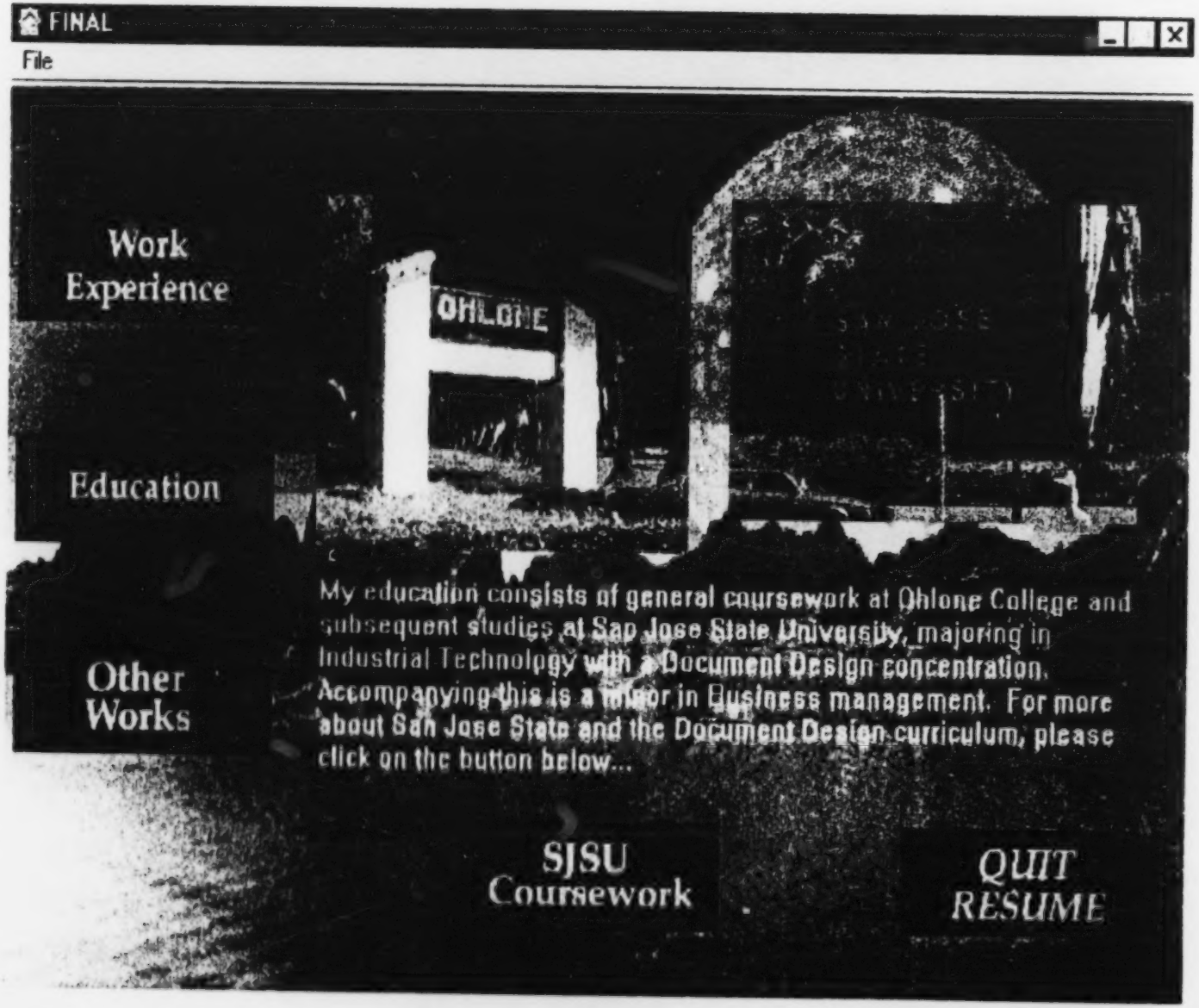
FINAL
File
Work Experience
Education
Other Works
OHLONE
My education consists of general coursework at Ohlone College and subsequent studies at San Jose State University, majoring in Industrial Technology with a Document Design concentration. Accompanying this is a minor in Business management. For more about San Jose State and the Document Design curriculum, please click on the button below...
SJSU Coursework
QUIT RESUME

Figure 6. Screen Print, Sample Resume in Group 2, Section on Education

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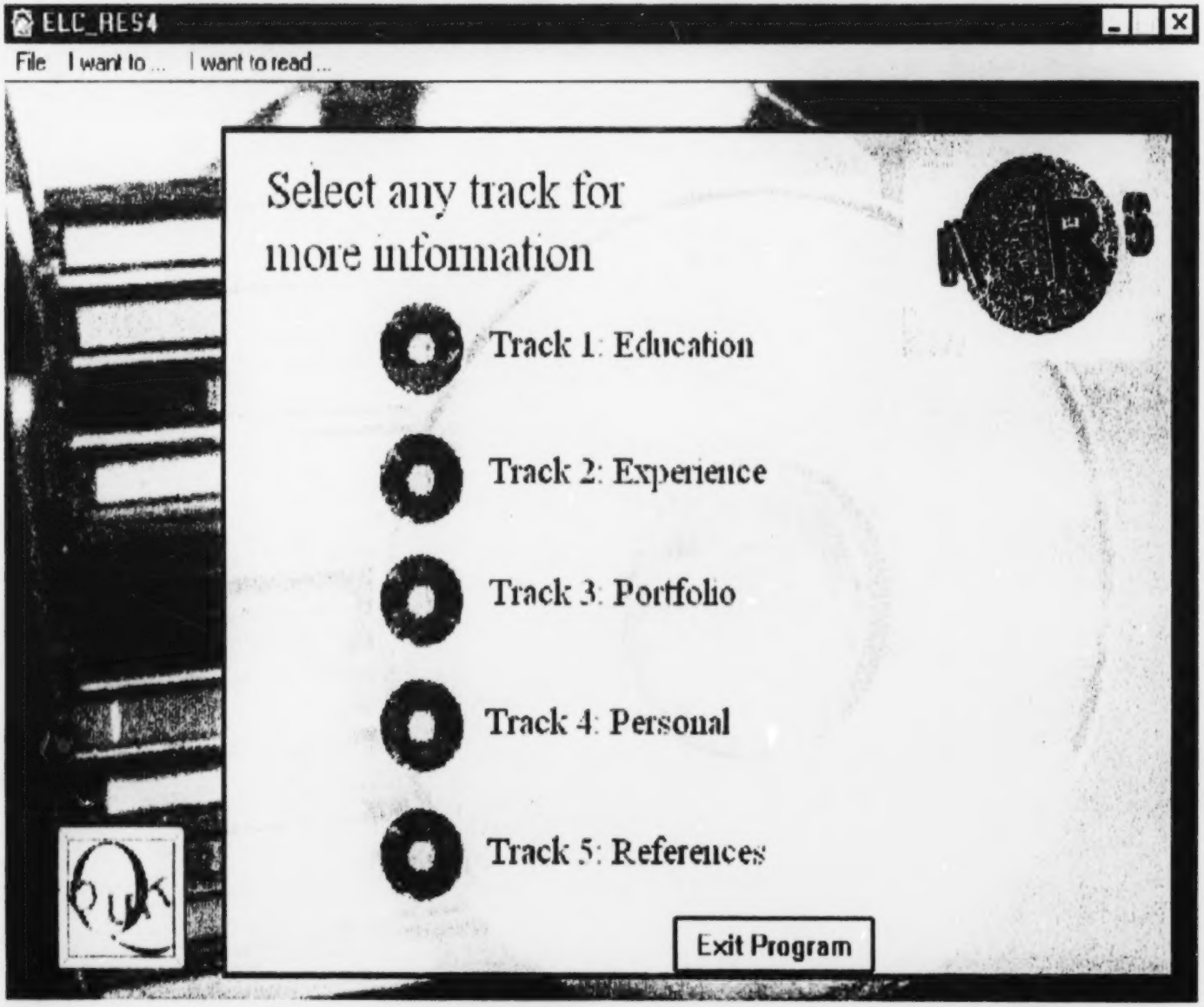

Figure 7. Screen Print, Main Menu, Sample Resume in Group 3

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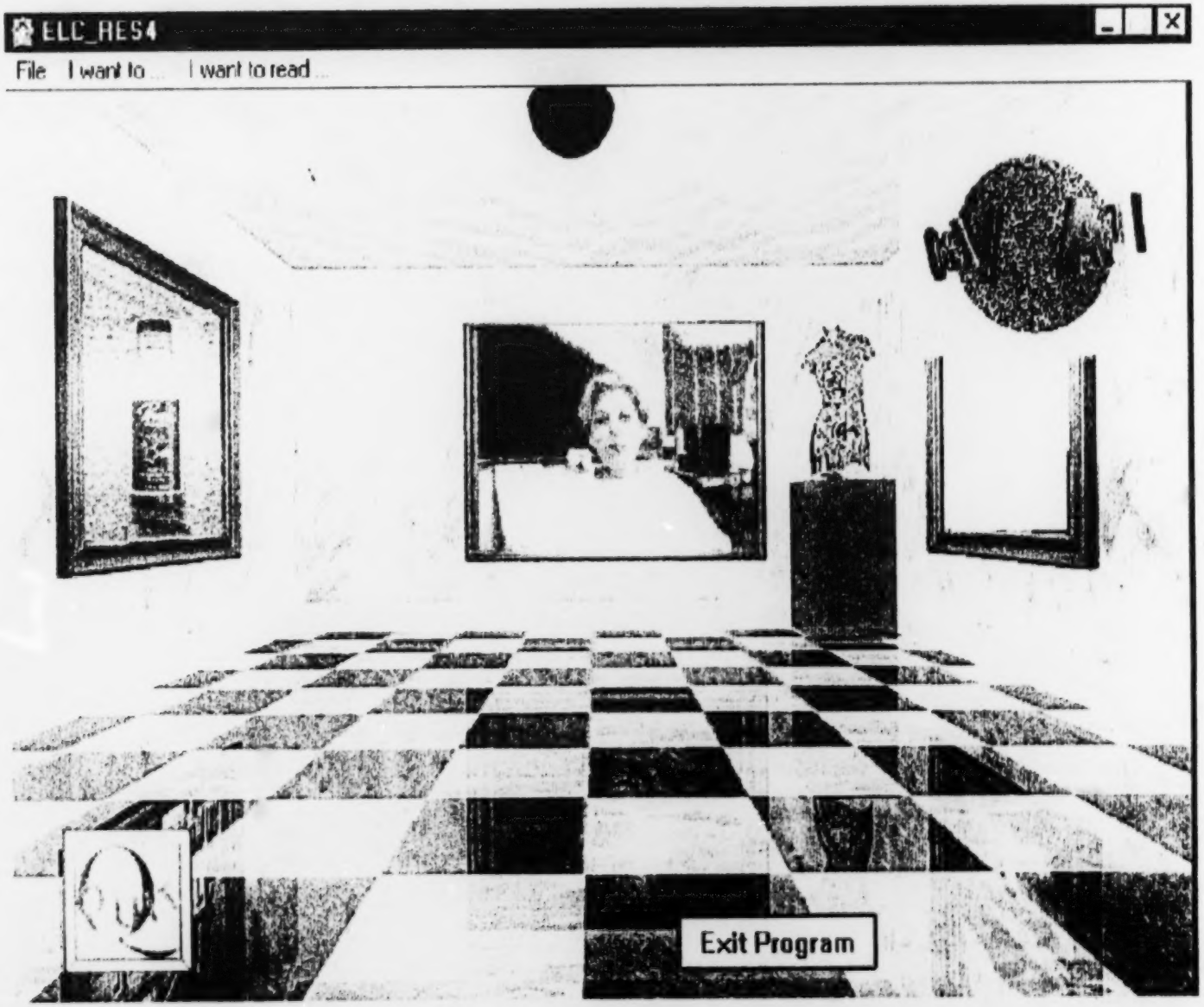

Figure 8. Screen Print, Sample Resume in Group 3, Track 3 Portfolio

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